

## REMARKS

### The Amendments

Claims 1-31 are pending after entry of the amendments set forth herein. Claims 1, 13, 21, 26, 30, and 31 have been amended. No claims are either canceled or withdrawn.

Claims 1, 30 and 31 are amended to replace “nanoparticle is not a metal-chalcogenide semiconductor” with “nanoreactor shell comprises a main group metal, transition metal, alkali metal, or alkaline earth metal”. Support for the amendment is found in the specification, such as in page 10, lines 6-11.

Claim 13 is amended to delete the word “and”. Support for the amendment is found in Claim 13 as originally filed.

Claim 21 is amended to recite “and comprise a main group metal, transition metal, alkali metal, or alkaline earth metal”. Support for the amendment is found in the specification, such as in page 10, lines 6-11.

Claim 26 is amended to replace the word “a” with “an” to correct a clear typographic error.

No new matter is added in the above amendment and the Examiner is respectfully requested to enter the amendment and reconsider the application.

### The Response

#### **Specification**

All references to the specification herein are to the substitute specification filed June 13, 2008.

#### **Election/Restriction**

The Examiner is requiring restriction under 37 CFR. § 1.499 to one of the following inventions:

- I.     Claims 1-20 and 28-31, drawn to a nanoreactor and method of using the reactor, wherein the nanoreactor comprises a nanoparticle that is not a metal-chalcogenide semiconductor; and

II. Claims 21-27, drawn to a method of making a nanoreactor.

Applicants hereby respectfully elect Group I, Claims 1-20 and 28-31 with traverse in that the phrase “nanoparticle is not a metal-chalcogenide semiconductor” has been deleted. The Examiner had stated in the Office Action dated June 16, 2009 that the present restriction requirement was necessitated by this amendment. In addition, independent Claims 1, 30 and 31 of Group I have been amended to recite “nanoreactor shell comprises a main group metal, transition metal, alkali metal, or alkaline earth metal”, and independent Claim 21 of Group II has been amended to recite “nanoreactor shell . . . comprises a main group metal, transition metal, alkali metal, or alkaline earth metal”. Accordingly, all of the claims in Groups I and II share the special technical feature of a nanoreactor shell comprising a main group metal, transition metal, alkali metal, or alkaline earth metal.

For the reason set forth above, Applicants hereby respectfully request the Examiner reconsider and withdraw the requirement for restriction.

#### **Rejection Under §112, first paragraph**

The Examiner rejects Claims 1-20, 28, 30, and 31 under 35 U.S.C. §112, first paragraph, for allegedly failing to comply with the written description requirement. Applicants respectfully disagree with Examiner’s rejection. However, solely in the interest of expediting prosecution, Applicants amend Claims 1, 30, and 31 to avoid the rejection.

Amended Claims 1, 30, and 31 no longer recite the phrase “nanoparticle is not a metal-chalcogenide semiconductor” which the Examiner alleged contained new matter. The present amendment renders this issue moot.

Accordingly, the Applicants respectfully request the Examiner to withdraw this rejection.

In the Office Action dated September 24, 2008 the Examiner rejected Claims 7-12 and 15-20 under 35 U.S.C. §112, second paragraph, for allegedly failing to

particularly point out and distinctly claim the subject matter. The Examiner is silent regarding this rejection in the Office Action dated June 16, 2009.

Applicants respectfully point out that in the Response dated February 25, 2009, Claim 7 was amended to delete the words “branched” and “either”, and Claim 18 was amended to recite “a length of tubular shape” which clarifies that the word “length” is referring to that of the “tubular shape”.

Accordingly, the Applicants respectfully request the Examiner to withdraw this rejection.

### **Rejection Under §102**

In the Office Action dated September 24, 2008 the Examiner rejected Claims 1-4 and 7-30 under 35 U.S.C. §102(e) for allegedly being anticipated by Torimoto et al. (U.S. Patent No. 76,381,465). The Examiner is silent regarding this rejection in the Office Action dated June 16, 2009. Applicants assume the rejection is maintained and hereby respond to it.

Applicants respectfully disagree with Examiner’s rejection. However, solely in the interest of expediting prosecution, Applicants amend Claims 1, 21, and 30 to avoid the rejection.

Amended Claim 1 is directed to a nanoreactor, comprising: a nanoreactor shell enveloping a space, and further comprising a nanoparticle disposed within the space, wherein the nanoreactor shell comprises a main group metal, transition metal, alkali metal, or alkaline earth metal. Claims 2-4, 7-20, 28, and 29 depend from Claim 1. Amended Claim 21 is directed to a method of making a nanoreactor comprising a nanoreactor shell comprising a main group metal, transition metal, alkali metal, or alkaline earth metal. Claims 22-27 depend from Claim 21. Amended Claim 31 is directed to a method of catalyzing a reaction comprising contacting one or more reactant with a nanoreactor comprising a nanoreactor shell comprising a main group metal, transition metal, alkali metal, or alkaline earth metal.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference."

*Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051,

1053 (Fed. Cir. 1987).

Torimoto et al. do not teach a nanoreactor shell comprising a main group metal, transition metal, alkali metal, or alkaline earth metal. Torimoto et al. merely disclose a core-shell structure having a shell which is a film having silicon-oxygen bond in its structure, and which preferably comprises a non-photoetchable material (col. 3, lines 1-5). Torimoto et al. also discloses that preferably the shell is a silicon oxide (col. 3, lines 7-8), but provide no further teaching regarding any other materials. Nowhere in this disclosure do Torimoto et al. teach a nanoreactor shell comprising a main group metal, transition metal, alkali metal, or alkaline earth metal.

Since Torimoto et al. fail to teach each and every element of Claims 1-4 and 7-30, it fails to anticipate these claims under 35 U.S.C. §102(e). Accordingly, the Applicants respectfully request the Examiner to withdraw this rejection.

### Rejection Under §103

In the Office Action dated September 24, 2008 the Examiner rejected Claims 5, 6, 29, and 31 under 35 U.S.C. §103(a) for allegedly being rendered obvious by Torimoto et al. The Examiner is silent regarding this rejection in the Office Action dated June 16, 2009. Applicants assume the rejection is maintained and hereby respond to it.

Applicants respectfully disagree with Examiner's rejection. However, solely in the interest of expediting prosecution, Applicants amend Claims 1 and 31 to avoid the rejection.

For the reasons set forth above, Torimoto et al. do not teach a nanoreactor shell comprising a main group metal, transition metal, alkali metal, or alkaline earth metal. Further, Torimoto et al. provide neither suggestion nor motivation for having a nanoreactor shell comprising a main group metal, transition metal, alkali metal, or alkaline earth metal.

In regards to Claims 5 and 6, the Examiner states "Torimoto teaches metal as the material for the particular nanocore" (Office Action dated September 24, 2008, page 4). However, Claims 5 and 6 actually recite "the shell comprises a material selected from the group consisting of . . ."

Since Torimoto et al. fail to teach or suggest each and every element of Claims

5, 6, 29, and 31, this reference fails to render these claims obvious under 35 U.S.C. §103(a). Accordingly, the Applicants respectfully request the Examiner to withdraw this rejection.

### CONCLUSION

In view of the foregoing remarks and amendment, Applicants respectfully submit that all of the claims are in condition for allowance, which action is requested. If in the opinion of the Examiner, a telephonic conference would expedite the prosecution of the subject application, Applicants encourage the Examiner to call the undersigned at (510) 486-4534.

If any fee is required to maintain pendency of this application, the Commissioner is authorized to charge any necessary and additional fees, including fees for additional extensions of time, that may be due to Deposit Account No. 120690, referencing Attorney Docket: IB-2018.

Respectfully submitted,

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